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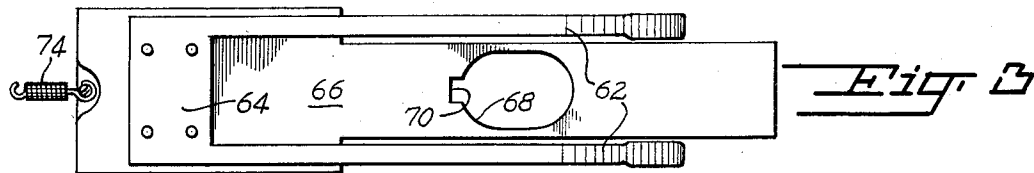
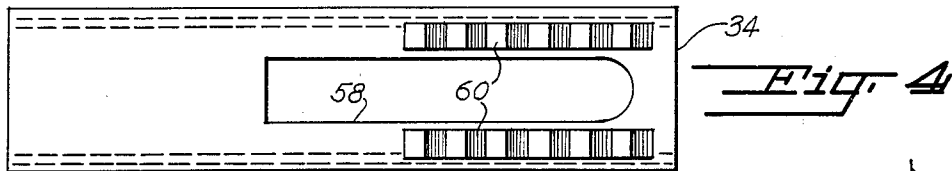
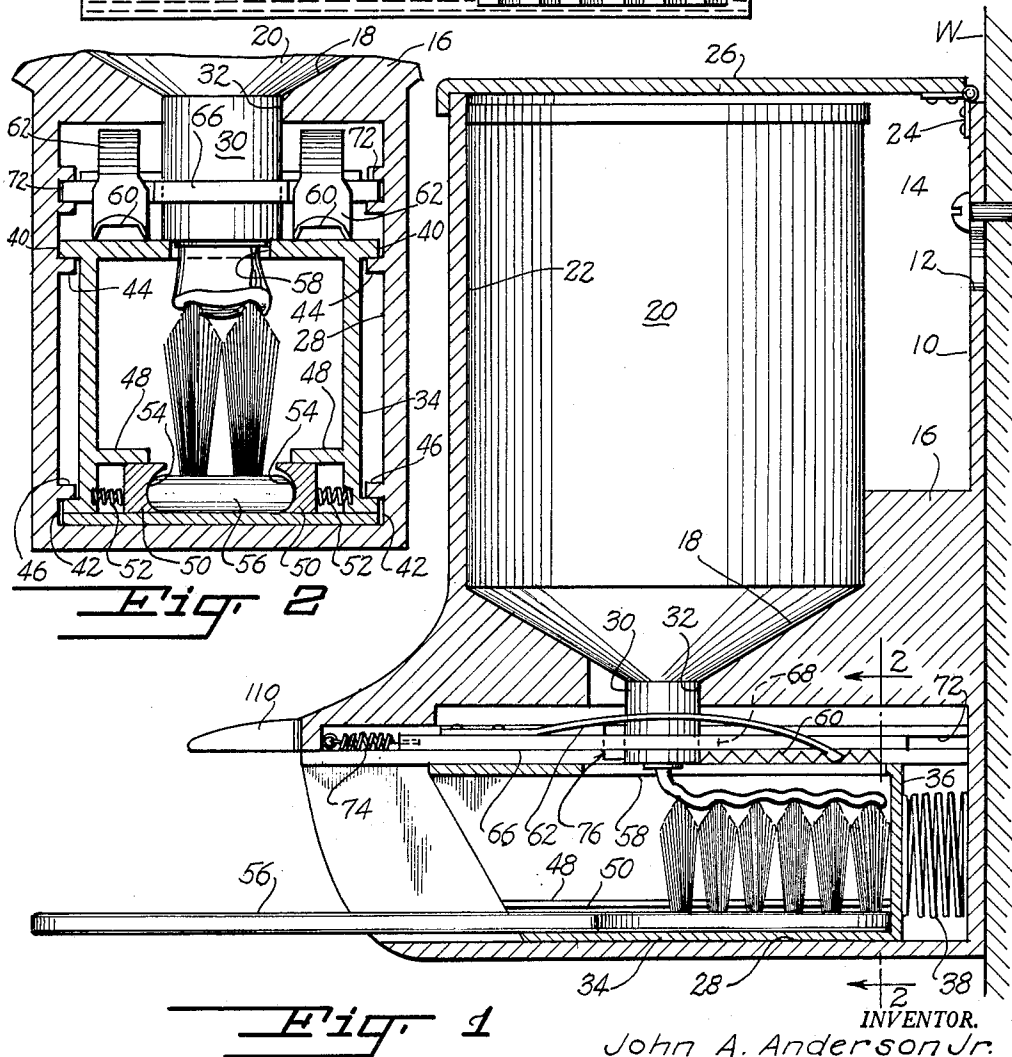
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2,726,016

DISPENSING DEVICE FOR PASTE MATERIALS

Filed Aug. 7, 1953

2 Sheets-Sheet 1



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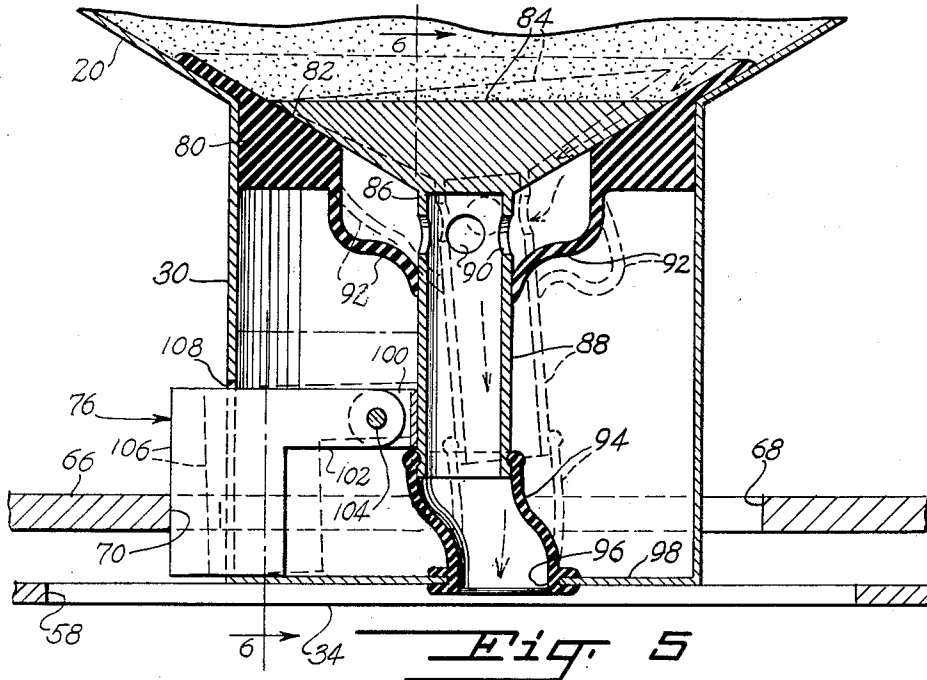
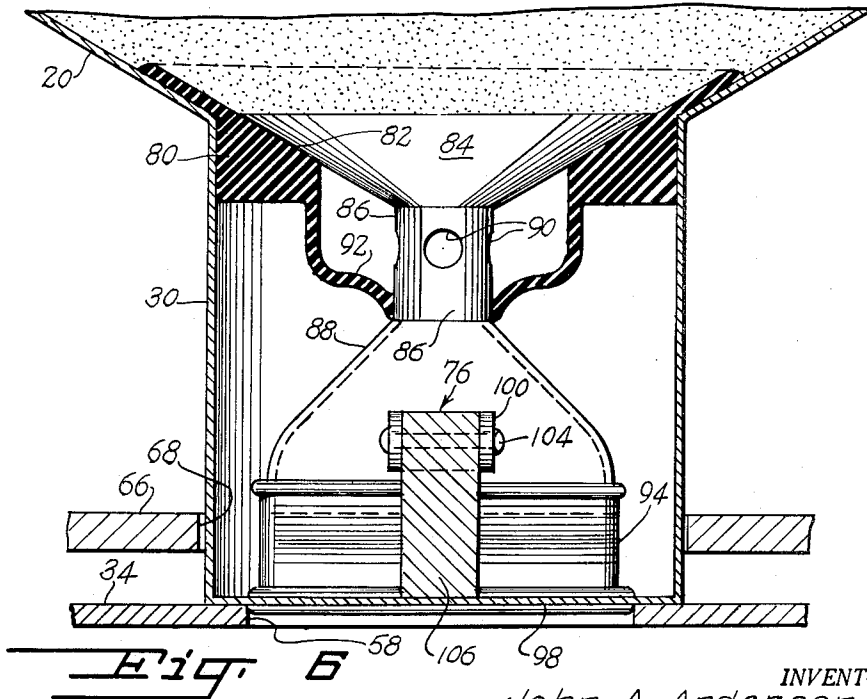
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DISPENSING DEVICE FOR PASTE MATERIALS

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4 Claims. (Cl. 222—127)

The present invention relates to dispensing devices, and more particularly has reference to a device adapted to control the discharge of paste materials such as toothpaste, etc.

The main object of the present invention is to provide a generally improved dispensing device of the character referred to, which will be so designed as to particularly adapt the same for controlling the discharge of paste material from a container wherein said material is held under pressure. Containers of this type have found increasing favor in recent years, and are widely used for holding whip cream, shaving cream, and the like. Customarily, a container of this nature is equipped with a valve of a type including a laterally swingable spout, lateral swinging of the spout to a position to which it is disposed obliquely to the axis of the container being adapted to actuate the valve to an open position. Such a container is believed well suited to hold a material such as a dentifrice, and it is accordingly an important object of the present invention to associate, with such a dentifrice container, means shiftable by an inserted object, as for example a toothbrush, which means will actuate the valve to open position responsive to movement of the inserted object therebelow.

A further object of importance is to provide, in a device of the type stated, a pair of adjacent slides one of which constitutes a main slide and is shiftable a substantial distance by the inserted object, and the other of which constitutes an auxiliary slide and has a ratchet and pawl connection to the main slide that will cause movement of the auxiliary slide for only a part of the distance traveled by the main slide, the auxiliary slide controlling opening of the valve and the main slide being adapted to follow movement of the inserted object below the valve for a distance sufficient to spread the material in ribbon-like form on said inserted object.

Another object is to provide, in a device of the type referred to above, means on the main slide for centering the inserted object in proper position below the dispensing opening of the container, said centering means being automatically adjustable as to width to accommodate inserted objects of different sizes.

Yet another object is to provide, in a dispensing device for paste materials, a valve assembly wherein the discharge opening of the container will be disposed at an unvarying location relative to the container body, despite the fact that the valve is opened by lateral swinging of a dispensing spout. Heretofore, a disadvantage noted in connection with containers and valves of the nature discussed above resides in the bodily shifting of the dispensing end of the spout, during the opening of the valve. In such cases, it is sometimes difficult to locate the discharge end of the spout at an exact position for accurate dispensing of material therethrough. Further, an arrangement wherein the discharge end of the dispensing spout is bodily shiftable laterally of the container body is not suitable for mountings wherein the container is

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fixedly supported in association with a valve-opening dispensing device of the type hereinbefore referred to.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawings, in which like reference characters designate like parts throughout the several views, wherein:

Figure 1 is a longitudinal sectional view through a dispensing device formed in accordance with the present invention, a container with which said device is associated being illustrated in an inverted position;

Figure 2 is an enlarged transverse sectional view through the dispensing device on line 2—2 of Figure 1;

Figure 3 is a top plan view of the auxiliary slide, per se;

Figure 4 is a top plan view of the main slide per se;

Figure 5 is a greatly enlarged sectional view taken longitudinally and diametrically of the valve assembly of the container; and

Figure 6 is a sectional view on line 6—6 of Figure 5.

The reference letter W has been applied to the surface of a room wall, on which the dispensing device constituting the present invention is adapted to be permanently or temporarily mounted, whichever is desired. The dispensing device includes a support means, said support means being formed from plastic, metal, wood, or any other suitable material. The support means includes a flat back plate 10 adapted to be positioned against the wall surface, said back plate having a keyhole slot 12 through which projects a screw 14 or equivalent supporting element, said screw extending into the wall surface.

Integral with the lower end portion of the back plate 10 is a solidly formed base 16, said base also constituting part of the support means and being formed with an upwardly opening recess 18 in which is removably engaged the discharge end of a container 20. In the illustrated example, the container 20 is formed conically at its discharge end, but it will be understood that the container can be varied as to the configuration thereof. Of course, the recess 18 would be shaped so as to complement the shape of the discharge end of the container, the container being inverted preliminary to seating thereof in the recess.

Also constituting part of the support means is a front wall 22, the front and back walls cooperating to define a space within which a container 20 will be disposed. Of course, the support means could be so designed as to completely enclose the container body, thereby to conceal the container from view. In any event, a hinge 24 is provided upon the upper end of the back plate 10, and attached to said hinge is a vertically swingable lid 26 providing access to the interior of the support means, for insertion or removal of a container 20.

In the lower end portion of the base 16, I form a cavity 28 (Figures 1 and 2) said cavity being of rectangular cross section as best shown in Figure 2, and being relatively elongated, the cavity being formed open at that end of the base 16 remote from the wall surface W.

The neck 30 of the container 20 extends downwardly into said cavity as best shown in Figure 1, the base 16 having an opening 32 communicating between the cavity 28 and the recess 18, with said opening being adapted for extension of the neck therethrough.

Mounted in the cavity 28 is a main slide 34. The main slide 34 is rectangular in cross section as best shown in Figure 2, and is of hollow formation, said main slide being closed at one end as at 36 and being formed with its other end open. The end wall 36 provides an abutment for one end of a coil spring 38 held under compression between the slide 34 and the back plate 10. Spring 38 tends to shift the main slide 34 to the left in Figure 1, it being understood that normally, the main slide would

be disposed to the left of the position in which it is illustrated in Figure 1.

For the purpose of guiding the main slide during its sliding movement in cavity 23, said main slide has outwardly directed, upper longitudinal flanges 40, and outwardly directed, lower longitudinal flanges 42, the flanges 40, 42 being retained in slidable contact with guide ribs 44, 46 respectively extending inwardly from the opposite side walls of the cavity 23 (Figure 2).

Also formed integrally upon the main slide 34, and projecting inwardly toward one another within the interior of the main slide, are coplanar lips 48, said lips 48 extending the length of the main slide as best shown in Figure 1. The lips 48 serve as hold-down means for centering bars 50 urged toward one another within the main slide by springs 52. The centering bars are formed with transversely depressed inner surfaces 54, engaging the opposite side edges of the head of an inserted article such as a toothbrush 56.

Formed in the top wall of the main slide 34 is an elongated, closed longitudinal slot 58 (Figure 4) and ranged along opposite sides of said slot are elongated racks 60.

The racks 60 are adapted to engage the free ends of elongated, longitudinally curved leaf springs 62, said springs 62 being integral at their inner ends with a bight portion 64 riveted or otherwise fixedly secured to one end of an auxiliary slide 66. The auxiliary slide 66 is formed as a flat plate disposed above the main slide, said flat plate having, intermediate its ends, a center opening 68 receiving the neck 30 of the container 20. A slot-like extension 70 is formed in the plate, in communication with the opening 68, for a purpose to be made presently apparent.

To guide the auxiliary slide during its slidable movement above the main slide, I provide (Figures 1 and 2) guide grooves 72 facing inwardly of the cavity 23, said guide grooves receiving the opposite side edges of the auxiliary slide.

It should be noted at this point that at their free ends, the leaf springs 62 are thickened to form enlargements on said leaf springs, which enlargements will complement the notches defined between the teeth of the respective racks 60.

Secured at one end to the outer end of the auxiliary slide 66 is a light pull-back coil spring 74, said pull-back spring being attached at its other end to the base 16 of the support means.

The leaf springs 62 are so tensioned as to cause the free ends of said springs to be normally engaged against the main slide. In this connection, the coil springs and the leaf springs would have to be calibrated together to obtain a smooth operating action, it being understood that the particular amount of pressure or pull each should have would be subject to determination in accordance with regular engineering practices.

In any event, if a toothbrush 56 is inserted in the main slide 34 and is utilized to shift the main slide to the right in Figure 1, the pressure with which the free ends of the leaf springs 62 are held against the main slide will be sufficient to cause joint movement of the auxiliary slide and main slide. In other words, at the initial stage of its movement to the right in Figure 1, the main slide 34 will carry with it the auxiliary slide 66. The opening 68 and slot-like extension 70, in this regard, are of such a size as to permit the auxiliary slide 66 to move relative to the stationary neck 30 projecting through said opening 68. The opening 68, accordingly, would ordinarily be elongated somewhat, as shown in Figure 3, the slot-like extension 70 being so proportioned as to normally engage a valve assembly 76, so as to prevent rotation of the container.

In any event, after the initial joint movement of the main and auxiliary slides, the inner end wall of the slot-like extension 70 will engage the outer end surface of the

valve assembly 76, and will shift the engaged part of the valve assembly inwardly toward the neck 30. This causes the valve of the container to be opened, for dispensing of the material therefrom onto the toothbrush 56.

Reference should now be had to Figures 5 and 6, wherein the details of the valve assembly are shown. As will be noted, the valve assembly 76 includes a circular rubber seat 80 engaged in the discharge end of the container body, at the inner end of the neck 30. The seat 80 has a conically shaped surface 82 against which is lodged the complementarily shaped peripheral portion of a valve disc 84. The valve disc 84 is normally held in the full line position thereof shown in Figure 5, but can be rocked to the dotted line position shown in said figure to permit the material to escape past the valve disc, in the direction of the arrows shown in Figure 5.

Integral or otherwise made rigid with the center portion of the valve disc, and projecting axially within the neck 30, is an outlet tube 86, said tube 86 being of cylindrical formation and being relatively short in length as best shown in Figure 6. At its outer end, the tube 86 merges into a relatively flat, flared spout 88, the spout 88 constituting a discharge spout and being so shaped as to cause the material forced therethrough to be given a ribbon-like form when it is deposited upon the bristles of the toothbrush.

Adjacent its integral connection to the valve disc 84, the tube 86 is formed with a circumferential series of inlet ports 90, and it will be seen that when the valve disc is rocked to its dotted line position in Figure 5, the material, forced out of the container under pressure, will move inwardly through the several ports 90, into the discharge spout 88. To insure the movement of said material into said discharge spout, I provide a flexible covering 92 integrally formed upon the rubber seat 80, said covering 92 being circumposed about the tube 86 to prevent loss of the material being dispensed.

It is to be noted from Figure 5 that to actuate the valve to open position, it is necessary that the discharge spout be rocked from its full line position to its dotted line position in this figure of the drawing. This causes the outlet end of the discharge spout to be shifted bodily from its normal position, and it will be appreciated that this is undesirable, in an arrangement in which the discharge opening of the container should be disposed at an unvarying location relative to the inserted toothbrush. To hold the discharge opening of the container at said unvarying location, a flexible conduit 94 is secured at one end to the outlet end of the spout 88, said conduit 94 being formed, at its other end, with a thickened bead having a circumferential groove in which is engaged the edge portion of an aperture 96 formed in an end wall 98 provided upon the neck 30.

It is desirable that means be connected to the laterally swingable spout 88, whereby movement of the auxiliary slide 66 will cause the spout to be shifted from its full to its dotted line position in Figure 5. To this end, a U-shaped bracket 100 is anchored to the spout 88, and disposed between the arms of said bracket is one end of an arm 102 pivotally connected to said bracket arms by a hinge pin 104. At its other end, the arm 102 is integral with a depending push-button 106, loosely slidable in an opening 108 formed in the side wall of the neck 30. The push-button 106 projects exteriorly of the neck, and is engageable by the inner end wall of the slot-like extension 70 of the opening 68, when the auxiliary slide 66 is shifted to the right in Figure 1.

It is to be noted that the spring 74 is quite light and will not hold the auxiliary slide against movement to the right in Figure 1 with the main slide 34, during the initial movement of said main slide. Of course, when the push-button has been shifted by the auxiliary slide to its dotted line position shown in Figure 5, the auxiliary slide will be held against further movement. However, the main slide will continue its movement to the right in Figure 1, the leaf

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springs 62 now ratcheting over the teeth of the racks 60. The continued movement of the main slide 34, after movement of the auxiliary slide has been halted, will be effective to allow shifting of the tooth-brush bristles an ample distance below the now opened valve, whereby to cause the material to be discharged in a ribbon-like form upon the toothbrush.

The base 16, if desired, can be provided with one or more pairs of spaced support arms 110, between which toothbrushes can be supported when not in use.

It is believed possible to so construct the device as to cause the operation of the slides to be reversed, in such a manner as to dispense the material upon the brush when the brush is being pulled out of the device, as distinguished from the illustrated arrangement wherein the brush is loaded when being inserted. This might be more feasible commercially, since it would eliminate the possibility of the paste being forced into the brush, or being rolled off the brush and left in the cavity. The basic principle of operation would, of course, remain substantially unchanged.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. The combination, with a container including a valve swingable transversely of the container to permit the discharge of materials therefrom, of support means for the container; a main slide on the support means movable in a first and in a second, return direction adjacent said valve and shiftable in said first direction by an object inserted in the support means, on to which object the material is to be dispensed; and an auxiliary slide on the support means having a connection to the first slide adapted to effect joint movement of both slides during the initial part of the sliding movement of the main slide in said first direction, said valve being located in the path of movement of the auxiliary slide for shifting of the valve to an open position by the auxiliary slide, said connection including means releasably connecting said main and auxiliary slides for initial joint movement, and further means resiliently connecting said auxiliary slide with said support restraining said auxiliary slide from further movement subsequent to said initial joint movement of the slides.

2. The combination, with a container including a valve swingable transversely of the container to permit the discharge of materials therefrom, of support means for the container arranged for holding the container in an inverted position; a main slide on the support means disposed adjacent said valve, said main slide being adapted to be shifted in one direction by an object on to which the material is to be dispensed; yielding means interposed between the main slide and support means, tensioned to effect return movement of the main slide; and an auxiliary slide on the support means having a connection to the main slide adapted to effect joint movement of both slides during the initial part of the sliding movement of the

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main slide in said one direction, said valve being located in the path of movement of the auxiliary slide for shifting of the valve to an open position by the auxiliary slide, said connection including means releasably connecting said main and auxiliary slides for initial joint movement, and further means resiliently connecting said auxiliary slide with said support restraining said auxiliary slide from further movement subsequent to said initial joint movement of the slides.

3. The combination, with a container including a valve swingable transversely of the container to permit the discharge of materials therefrom, of support means for the container arranged for holding the container in an inverted position; a main slide mounted on the support means subjacent said valve, said main slide being adapted to be shifted in one direction by an object on to which the material is to be dispensed; yielding means interposed between the main slide and support means, tensioned to effect return movement of the main slide; a rack rigid with the main slide; an auxiliary slide mounted on said support means adjacent the main slide and including a pawl engageable with the rack and adapted to effect joint movement of both slides during the initial part of the sliding movement of the main slide in said one direction, said valve being located in the path of movement of the auxiliary slide for shifting of the valve to an open position by the auxiliary slide, the valve halting movement of the auxiliary slide with the pawl ratcheting over said rack, during continued movement of the main slide and its associated object in said one direction below the valve.

4. The combination, with a container for paste materials including a valve swingable transversely of the container to permit the discharge of said material therefrom, of support means for the container arranged for holding the container in an inverted position; a main slide mounted on the support means subjacent said valve, said main slide being adapted to be shifted in one direction by an object on to which the material is to be dispensed; yielding means interposed between the main slide and support means, tensioned to effect return movement of the main slide; a rack rigid with the main slide to shift therewith in said one direction; an auxiliary slide mounted on said support means above the main slide, said auxiliary slide being shiftable along lines paralleling the line of movement of the main slide, the auxiliary slide including a pawl engageable with the rack and adapted to effect joint movement of both slides during the initial part of the sliding movement of the main slide in said one direction, said valve being located in the path of movement of the auxiliary slide for shifting of the valve to an open position by the auxiliary slide, the valve halting movement of the auxiliary slide with the pawl ratcheting over said rack, during continued movement of the main slide and its associated object below the valve in said one direction, said main slide being shiftable a distance sufficient for spreading the paste material in ribbon form on said object.

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